SIEMENS

SIREMOBIL Iso-C

SP

Image Quality Quick Test

English

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Chapter	Page	Revision
0	all	08

Document revision level

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Page

System ID

Part no.	_____	Serial no.	_____
Customer/clinic:	_____		
Address	_____	City:	_____
State:	_____	Country:	_____
Tel. no.:	_____	Contact person:	_____
System no.:	_____	Regional office:	_____
Responsible system engineer:		_____	

Image quality acceptance test performed completely in the factory and documented by:

Name (print): _____ Dept.: _____
Signature: _____ Date: _____

Date of system installation at the customer site: _____

Image quality quick test performed in connection with:

Turnover to the customer ☐
maintenance ☐

Adjustments deviating from standard specifications due to:

Country-specific regulations ☐ Special customer request ☐
What was modified:_____
_____
_____
_Reason:_____
_____

Name (print): _____ Regional office: _____
Signature: _____

Safety information

⚠CAUTION	**When performing the work steps and tests, the product-specific safety information contained in the documents, as well as the general safety information TD00-000.860.01... must be observed.**

Notes and symbols

Emphasized texts in technical documentation have the following meaning:

⚠DANGER	**DANGER indicates an immediate danger that could result in death or serious physical injury.**
⚠WARNING	**WARNING indicates a risk of danger that could result in death or serious physical injury.**
⚠CAUTION	**CAUTION used with the safety alert symbol indicates a risk of danger that could result in slight or moderate physical injury and/ or damage to property.**
NOTICE	**NOTICE used without the safety alert symbol indicates a risk of danger that, if disregarded, could result in an undesirable result or state other than death, physical injury or property damage.**

Required measurement devices and auxiliary materials

- Set of 10 x 0.3 mm Cu X-ray filters e. g. 44 06 120 RV090

- 2.1 mm Cu precision X-ray filter e. g. 99 00 598 XE999

- 25 mm Al measurement stand, type 26765 according to DIN 6868 part 50
  or
  1.2 mm Cu from the radiation filter set e. g. 97 98 596 G5321 and
  17 µm Cu strip 11 67.662 G5247

- Set of resolution test patterns 28 71 820 RE999
  Factory: resolution test type 41a

- Densitometer e.g., X-rite 331 97 02 416 Y1996
  or PTW-BC21 including Black-Check
  Type 5321 and Light box type 53213

  TV dynamic range test kit e. g. 37 90 156 X1963
  or 97 50.001 X1963

contains:	TV dynamic test	37 90.164 X1963
	Heart contour diaphragm	37 90.172 X1963
	Capillary test	37 90.180 X1963
	Holder	87 13.901 X1963
	Lead step test	87 09 743 X1963

- Protective conductor meter e. g. 44 15 899 RV090

- Service PC

- Service Software SIREMOBIL Iso-C

- Service PC SIREMOBIL serial interface cable e. g. 99 00 440 RE999

- Calibration phantom Iso-C 3D with Navi 75 51 620 G5486
  (replaces calibration phantom Iso-C 3D serial no.
  71 39 947)

Test requirements

- The entire system must be functioning properly; in addition, make sure that the following are installed:
  - Grid,
  - X-ray I.I. cover, and
  - Sirephos cover (without DHHS spacer).
- If the nominal values are not attained, the system must be adjusted or repaired according to the service instructions.
- Mark the appropriate boxes ☐ y/n with "y" for yes or "n" for no.

Prerequisites

- The standard settings are programmed for fluoroscopy, pulsed fluoroscopy and DR (see appendix).
- Attach the 2.1 mm Cu precision radiation filter for prefiltration to the X-ray port on the tube assembly.
- Select "mid" as the dose rate; this corresponds to a dose rate of

X-ray I.I. 23 (9"): 0.185 µGy/s ±15% with survey format (see User-Setup).

X-ray I.I. 27 (11"): 0.14 µGy/s ±15% with survey format (see User-Setup).

Evaluation

NOTICE

The ADR curves programmed as standard have to be checked. If other ADR curves have been programmed at the customer's request, first check the standard programmed characteristics for comparison to ensure that nothing has changed on the system following delivery from the factory.

Use the mA button to select the curves for each of the selected operating modes.

ADR curves for fluoroscopy operating mode

- Select
- Select the image intensifier format; the LED of the button is off.
- Select Siematic HC 1 ADR curve; the LED of the mA button is off.
- Radiation on.
- Read the indicated kV and mA values on the control panel.
- Radiation off.
- Enter the values in Tab. 1.
- Select Siematic HC 2 ADR curve; the LED of the mA button is on.
- Radiation on.
- Read the indicated kV and mA values on the control panel.
- Radiation off.

- Enter the values in Tab. 1.
- The actual values documented in the factory must be reproduced at the application site. Permissible deviations: Tube voltage (kV) ± 1kV, tube current (mA) ± 10 %.

ADR curvesfluoros-copy	Nominal values (factory)		Actual values			
			Factory		Application site	
	KV	mA	KV	mA	KV	mA
Siramatic HC 1	63 - 68 KV	1.9 - 3.8 mA				
Siramatic HC 2	61 - 66 KV	2.1 - 4.7 mA				

Tab. 1

ADR curves for pulsed fluoroscopy operating mode

- Select . Select the image intensifier full image format; the LED of the button is off.
- Select Siematic HC 1 ADR curve; the LED of the button is off.
- Radiation on.
- Read the indicated kV and mA values on the control panel.
- Radiation off.
- Enter the values in Tab. 2.
- Select Siematic HC 2 ADR curve; the LED of the button is on.
- Radiation on.
- Read the indicated kV and mA values on the control panel.
- Radiation off.
- Enter the values in Tab. 2.
- The actual values documented in the factory must be reproduced at the application site. Permissible deviations: Tube voltage (kV) ± 1kV, tube current (mA) ± 10 %.

ADR curves pulsedfluoros-copy	Nominal values (factory)		Actual values			
			Factory		Application site	
	KV	mA	KV	mA	KV	mA
Siematic HC 1	63 - 68 KV	1.9 - 3.8 mA				
Siematic HC 2	61 - 66 KV	2.1 - 4.7 mA				

Tab. 2

ADR curves for DR operating mode

- Select "Mid" as the dose rate (User setup).
- Sel . Select the image intensifier full image format; the LED of the button is off.

- Radiation on.
- Read the indicated kV and mA values on the control panel.
- Radiation off.
- Enter the values in Tab. 3.
- The actual values documented in the factory must be reproduced at the application site. Permissible deviations: Tube voltage (kV) ± 1kV, tube current (mA) ± 10 %.

ADR curves DR	Nominal values (factory)		Actual values			
			Factory		Application site	
	KV	mA	KV	mA	KV	mA
DR 850W	61 - 66 KV	2.7 - 6.5 mA				

Tab. 3

- Select "High" as the dose rate (user setup).

Checking the resolution and the minimum contrast

- Prerequisites:
  - Select FLUO and "Mid" as the dose rate level.
  - Select Siematic HC 1 ADR curve; the LED of the mA ↑ button is off.
  - Set edge enhancement for optimum recognition of resolution.
  - Press the button for noise reduction; the LED of the button must be off.
  - Set the contrast (LUT 3 or 4) for the monitors to optimum recognition of resolution.
  - Factory: use resolution test type 41 A.
  - Application site: use resolution test type 41 A.

    Attach the resolution test directly to the grid in the center of the image intensifier. It should be located at an angle of approximately 45º to the grid lines.
  - Factory:

    Attach 25 mm AL measurement stand to the image intensifier.
  - Application site:

    If a 25 mm measurement stand is present (with 0.4 mm notch), attach it close to the image intensifier.
    Otherwise:
    Attach the 17µm Cu strip directly to the grid next to the resolution test, and place an additional 1.2 mm Cu filtration in the beam path, close to the tube.
  - Switch radiation "ON." Determine the resolution of the LIH image and enter it in Tab. 1.
  - If overframing occurs at the edge of the image intensifier, eliminate this with collimation.
  - Switch radiation "OFF." Determine the resolution of the LIH image and enter it in Tab. 1.
  - In each case, check that the minimum contrast is detectable, i.e. whether the line pairs indicate visible modulation.
- Evaluation
  - Determine the line pairs/mm and enter the value in Tab. 1.

Operating mode	Image intensifier format	**Nominal resolution values** [**Lp/mm**]		**Actual resolution errors** [**Lp/mm**]			
		I.I. 23 (9")	I.I. 27 (11")	**Factory**		**Application site**	
				Monitor 1	Monitor 2	Monitor 1	Monitor 2
During radiation	Full format	≥ 1.2	≥ 1.0		n/a		n/a
LIH	Full format	≥ 1.2	≥ 1.0				
During radiation	Zoom	≥ 1.6	≥ 1.6		n/a		n/a
LIH	Zoom	≥ 1.6	≥ 1.6				

Tab. 1

Minimum contrast detectable?

Fac-		Application	
Full format:	y/n	Full format:	y/n
Zoom:	y/n	Zoom:	y/n

The minimum contrast must always be visible.

NOTICE **The dynamic test in conjunction with the Plexi capillary test is used to display small differences in contrast.**

- **Measurement setup:**
  - Remove the 2.1 mm radiation filter from the beam path.
  - Attach the dynamic test without the image intensifier fixing but with heart contour diaphragm and Plexi capillary test directly in front of the I.I. input (Plexi capillaries close to image intensifier).
- **Prerequisites:**
  - Select FLUO (button) standard settings (see appendix)
  - Select Siematic HC1. The LED of the mA button is off.
  - Select full format by pressing the button.
  - Select high noise reduction; the LED of the button is off.
  - Edge enhancement (button) off.
  - Select LUT 1.
  - Switch on radiation and evaluate the live image.
- **Evaluation of the monitor image**
  - **Nominal value**
    The unmarked Plexi capillaries in Fig. 1a must be visible.
  - Cross off Plexi capillaries in Fig. 1b that are not visible.

.

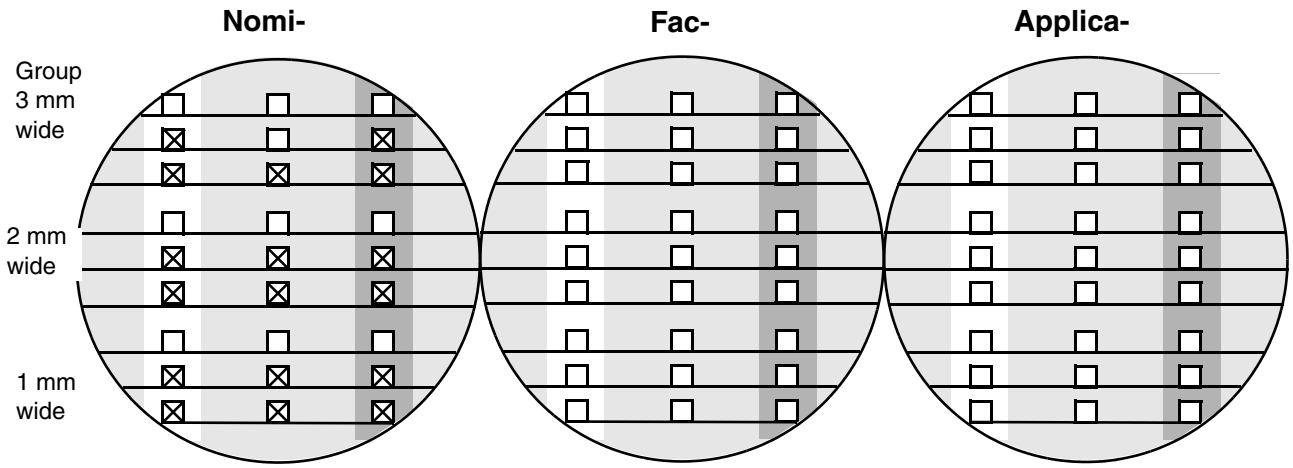

Fig.1a Fig.1b Fig.1c

Capillary test for Memoskop C-SUB or Memoskop C-SUB & Mod

Memoskop C-SUB or Memoskop C-SUB & Mod is present: ☐ y/n

If "no," omit the capillary test.

for Memoskop C-SUB or Memoskop C-SUB & Mod.

Subtraction mode

Measurement setup:

- Attach the dynamic test without the image intensifier fixing but with the heart contour diaphragm and Plexi capillary test directly in front of the image intensifier input (Plexi capillaries close to image intensifier).

Prerequisites

- Select SUB.
- Use the standard settings.
  (Set the dose rate level at "High" in the user setup)
  Noise reduction for mask: k = 32; check subtraction k-factor, phase A
  Noise reduction for fill: k = MD2; check subtraction k-factor, phase B in Technical Setup)
- Select full format by pressing the  button.
- Edge enhancement off; select  = the softest display.

Procedure

- Release the scene (radiation on)
- After 3 seconds, the mask is automatically set.
  The message "Inject" appears on the monitor.
- Start the Plexi capillary test by pressing the rubber ball.
- Shut off radiation after 3 seconds.
- Skip back one image for the white lines.
- Continue flipping back through images until the maximum contrast of the dark lines is visible.

Evaluation 1

- Select LUT 4 on both monitors by pressing the  keys.
- Find the capillary lines to be evaluated on monitor B in the individual matrix fields. They should be separated according to black and white.

NOTICE **Do not evaluate the first white line. Start the evaluation with the first black line.**

- Enter the results in table 1 and table 2. If a line is not recognizable, identify it with x.

	Nominal values			Factory			Application site			
	2L	1	5R	2L	1	5R	2L	1	5R	Group
Black										Upper group 3 mm wide
Black			**X**							
Black	**X**	**X**	**X**							
Black										Middle group 2 mm wide
Black		**X**	**X**							
Black	**X**	**X**	**X**							
Black										Lower group 1 mm wide
Black			**X**							
Black	**X**	**X**	**X**							

Tab. 1

	Nominal values			Factory			Application site			
	2L	1	5R	2L	1	5R	2L	1	5R	Group
White										Upper group 3 mm wide
White		**X**	**X**							
White	**X**	**X**	**X**							
White										Middle group 2 mm wide
White		**X**	**X**							
White	**X**	**X**	**X**							
White										Lower group 1 mm wide
White			**X**							
White	**X**	**X**	**X**							

Tab. 2

Evaluation 2

- Evaluate the 3 mm white capillary line (the large line) in fields 2L, 1, and 5R on monitor B. No obvious brightness differences should be visible between the fields.

No obvious differences in brightness are visible in fields 2L, 1, and 5R.

Factory	Application site
☐ y/n	☐ y/n

- Evaluate the 3 mm black capillary line (the large line) in fields 2L, 1, and 5R on monitor B. No obvious differences in brightness should be visible between the fields.

No obvious differences in brightness are visible in fields 2L, 1, and 5R.

Factory	Application site
☐ y/n	☐ y/n

Roadmap mode

Measurement setup:

- Attach the dynamic test without the image intensifier fixing but with the heart contour diaphragm and Plexi capillary test directly in front of the image intensifier input (Plexi capillaries close to image intensifier).

Prerequisites

- Select Roadmap.
- Use the standard settings.
- Set the dose rate level at "High" in the user setup)
  Noise reduction for Phase A: k = 16; check subtraction k-factor, phase A
  Noise reduction for Phase B: k = 8; check subtraction k-factor, phase B in Technical Setup)
  Noise reduction for Phase C: k = MD2; check in User Setup or Technical Setup)
- Select full format.
- Edge enhancement off.

Procedure

- Release the scene (radiation on; phase A)
- After >= 2 seconds, the mask is automatically set. The message "Inject" appears on the monitor.
- Do not shift the Plexi capillaries. (radiation remains on; phase B)
- Shut off radiation after 3 seconds.

- Release radiation again. (Phase C)
- Start the Plexi capillary test by pressing the rubber ball.
- Shut off radiation after another 3 seconds.

Evaluation

- Select LUT on both monitors by pressing the  keys.
- Find the capillary lines to be evaluated on monitor B in the individual matrix fields. They should be separated according to black and white.

NOTICE **Do not evaluate the first white line. Start the evaluation with the first black line.**

- Enter the results in table 3 and table 4. If a line is not recognizable, identify it with x.

	Nominal values			Factory			Application site			
	2L	1	5R	2L	1	5R	2L	1	5R	Group
Black										Upper group 3 mm wide
Black		**X**	**X**							
Black	**X**	**X**	**X**							
Black										Middle group 2 mm wide
Black	**X**	**X**	**X**							
Black	**X**	**X**	**X**							
Black										Lower group 1 mm wide
Black		**X**	**X**							
Black	**X**	**X**	**X**							

Tab. 3

	Nominal values			Factory			Application site			
	2L	1	5R	2L	1	5R	2L	1	5R	Group
White										Upper group 3 mm wide
White	**X**	**X**	**X**							
White	**X**	**X**	**X**							
White										Middle group 2 mm wide
White	**X**	**X**	**X**							
White	**X**	**X**	**X**							
White										Lower group 1 mm wide
White		**X**	**X**							
White	**X**	**X**	**X**							

Tab. 4

Diese Seite wurde bewusst leer gelassen.

Prerequisites

- Attach the dynamic test without the image intensifier fixing but with the heart contour diaphragm and Plexi capillary test directly in front of the image intensifier input (Plexi capillaries close to image intensifier).
- Select FLUO.
- Contrast setting for monitors - step 1 (LUT = 1).
- Edge enhancement = 0

Edge enhancement

- Switch on fluoroscopy briefly. The LIH image is visible on the monitor.
- Press the button for edge enhancement several times.
  The 2 levels of edge enhancement are selected consecutively. Edge enhancement stage 1 - Edge enhancement stage 2 ...)

	Fac-	Applica-
- Edge enhancement function test o.k.? (The bright - dark - transitions become clearly visible when selecting level 1 or 2)	☐ y/n	☐ y/n

Noise reduction

- Press the button for selecting the noise reduction factor ; the LED of the button must light up (low noise reduction).
- Switch fluoroscopy on briefly and assess the noise impression of the image during radiation.
- Press the button for selecting the noise reduction factor ; the LED of the button is off (high noise reduction).
- Switch on fluoroscopy briefly and assess the impression of the image with radiation on. The noise should be less.

	Fac-	Applica-
- Noise reduction functioning o.k.? (Image noise is less with the LED of the key off).	☐ y/n	☐ y/n

Motion detector (factory only)

- **Prerequisites**
  - Select FLUO.
  - Select low noise reduction (MD 1); the LED in the button is on.
  - In addition, place a screwdriver on the center of the dynamic test.

  - Radiation "ON."
  - When activating the key for image rotation, the live image shows only a slight trailing effect.
    The image noise is more clearly visible in the moving parts of the image.
  - Radiation "OFF."
  - Select low noise reduction (MD 2); the LED in the button is off.

  - Radiation "ON."
  - When activating the key for image rotation, the live image shows a greater trailing effect than for low noise reduction
    The image noise is more clearly visible in the moving parts of the image.
  - Radiation "OFF."
  - Remove the screwdriver form the image intensifier.

- **Evaluation of the monitor image**

	Fac-
- Motion detection o.k.? (Trial effect vs. image noise)	☐ y/n

Checking the control systems (factory only) 6 - 1

The following control systems are in operation with the indicated prefiltration:

ADR	at approx. 6 mm Cu and dynamic test in the beam path
Iris diaphragm	at approx. 8.1 mm Cu and dynamic test in the beam path
AVR	at approx. 11.1 mm Cu and dynamic test in the beam path

This test is used to check the operation of these control systems.

Prerequisites

- For SIREMOBIL Iso-C with 2 monitors, both must be set for approximately the same (synchronous) brightness and contrast (LUT, brightness and contrast setting).

Preparations

- Attach the dynamic test without the image intensifier fixing:
  - with heart contour diaphragm,
  - without Plexi capillary test to the image intensifier.
- Select FLUO: dose rate level "Mid."
- Select Siramatic HC1 ADR curve; the LED of the  button is off.
- Select LUT 1 for both monitors (if existing).
- Select edge enhancement at maximum recognition of bright/dark transitions.
- Switch X-ray image intensifier to full format.
- Open the collimator to maximum aperture.
- Prefilter with copper until 106 kV to 109 kV is displayed.
  Switch on fluoroscopy briefly (approx. 6 mm Cu is required).

- Radiation ON.
- Evaluate the brightness of the fluoro image.
- Radiation OFF.

Evaluation 1

- Attach an additional 2.1 mm Cu at the radiation output.

- Radiation ON;
  The generator maximum 110 kV / 3mA must be attained.
- Store the LIH image as reference image.
- Evaluate the brightness of the fluoro image.
- The brightness with approx. 6 mm Cu prefiltration and dynamic test should be approximately equal to the brightness with 8.1 mm Cu and the dynamic test.

	Factory
Brightness with ADR and iris diaphragm control the same?	☐ y/n

Evaluation 2

- Attach an additional 3 mm Cu at the radiation output.

- Radiation ON.
- Evaluate the brightness of the fluoro image.
- The brightness with approx. 8.1 mm Cu prefiltration and dynamic test should be approximately equal to the brightness with 11.1 mm Cu and the dynamic test.

	Factory
Brightness with ADR and iris diaphragm control the same?	☐ y/n

Image artifacts

- Cross off all image artifacts which have been detected during setting and image quality tests in the table provided in the image quality test certificate.
- If any image artifacts are detected which are not listed in the table, these must be described under "Other artifacts."
- To evaluate the respective artifacts, there are three rating numbers which indicate the extent of each artifact:

Definition of the rating numbers

1 = No artifacts could be determined during start-up.

2 = A few artifacts occurred sporadically during start-up. The cause could not be located and the "error" could not be corrected. The artifacts do not negatively influence the overall appearance of the images and do not compromise the diagnostic value of the images in any way. The artifacts are determined to be tolerable.

3 = During start-up, artifacts occurred frequently or with greater severity and they negatively influenced the overall appearance of the images or compromised their diagnostic value. Therefore, the artifacts were determined to be intolerable, and the system could not be turned over to the customer.

Description of the artifacts

- **Hum:**
  Inhomogeneity caused by electro-magnetic fields in imaging systems. This artifact may significantly influence the diagnostic value of the images depending on the degree. Optimally, this artifact should not occur at all. However, extremely low levels can be tolerated. Hum artifacts appear as periodic, horizontal bright and dark structures in the image; they appear briefly and are not specific to one location.
- **Interference stripes:**
  Very high frequency electro-magnetic fields appear in the image as bright or dark, sometimes very short, transverse marks in the image. They appear briefly. Stripes caused by contaminants on the surfaces of lenses, etc. should be included in this group. In this case, they are specific to one location and appear constantly. Stripes cannot be tolerated.
- **Ghosting:** These artifacts are object contours displayed twice, with the second contour generally shifted laterally. They are caused by reflections in long, poorly adjusted video cables. Clearly visible ghosting cannot be tolerated.
- **Background structures** are stationary, grid-shaped patterns primarily in dark regions of the image. They are also referred to as "standing noise."
- **Pixel errors** are image pixels without image information. They are visible on the monitor as bright and black dots the size of pixels.

  Some types of pixel errors can be tolerated, while others cannot. The TV camera is carefully inspected with respect to pixel errors at the TV test bay prior to shipment. TV cameras can be turned over to the customer only if the number of pixel errors meets factory specifications. These pixel errors can be tolerated and must be documented in the IQ test certificate.

Image artifacts

Required value for the assessment of the artifact: Only 1 and 2 can be tolerated.

Type of artifact	Factory			Start-up		
	Rating of the artifact ***1**					
	1	2	3	1	2	3
Hum						
Interference stripes						
Ghost images (reflections)						
Background structures						
Pixel errors						

***1 Rating number of artifact**

1 = No artifacts
2 = Slight artifacts
3 = Disturbances that cannot be tolerated

Remarks:_____

_____

_____

_____

Other artifacts

_____

_____

_____

_____

_____

(Upon customer request only, at the application site.)

The customer has selected the standard organ programs: ☐ y/n

If "y": omit this chapter.

SIREMOBIL Iso-C without keyboard

- Connect the service PC to the external service interface.
- Install the Memoskop service program on the service PC using the installation routine on the diskette.
  The service diskettes are located in the Log Book, Register 10.
- Call up the Memoskop service program and program the organ programs requested by the customer.
- Print out the programmed values using the print function in the Memoskop service program. Sign and date the printout and file it in the customer's copy of the operating instructions in the chapter "Curves and Diagrams."

SIREMOBIL Iso-C with keyboard

The customer can change the organ programs himself using the operating instructions. The programmed parameters can be read out again by the customer by calling up "User Setup."

Checking the newly programmed ADR curves

Prerequisites

The test of the standard programmed ADR curves (Siramatic HC1 and Siramatic HC2) was already performed. Refer to chapter 2 of these instructions.

- Select "Mid" as the dose rate level. This corresponds to a dose rate of
  - ➪ X-ray I.I. 23 (9"): 0.185 µGy/s ±15% with survey format.
  - ➪ X-ray I.I. 27 (11"): 0.14 µGy/s ±15% with survey format.
- If required, temporarily set the dose rate levels in the organ programs to "Mid."

Procedure

- Select FLUO.
- Attach a 2.1 mm Cu precision radiation filter for prefiltration to the radiation output.
- After selecting the respective fluoro organ program and activating the mA ↑ key, the programmed ADR curves can be selected.

- Switch fluoro ON.

NOTICE

Note the programmed dose rate level. To check the newly programmed ADR curves, temporarily set the dose rate level to "Mid" (see above).

Evaluation

- Read the kV and mA values displayed on the control panel and enter them for the associated ADR control curve in table 1.
- Switch fluoro OFF.
- Select any additionally programmed ADR control curves by selecting the corresponding organ programs and the mA ↑ key. Enter the kV and mA values in table 1.

ADR Curves	Typical values		Actual values on site	
	kV	mA	kV	mA
SIREMATIC LD	80 - 96	0.2 - 0.4		
SIREMATIC S1	67 - 79	0.9 - 1.5		
SIREMATIC S2	65 - 75	1.1 - 1.9		
SIREMATIC HC1	63 - 68	1.9 - 3.8		
SIREMATIC HC2	61 - 66	2.1 - 4.7		
IODINE	61 - 65	2.1 - 5.0		

Multispot 2000 present?
If "n": omit this chapter. ☐ y/n

Since the Multispot 2000 must be optimally set for the film used and the development required at the user's site, only a functional test is performed at the factory.

Functional check at the factory

The functional check must be performed for all possible image subdivisions, in each case with positive and negative image display.
Definition: Positive image display means that the hardcopy image is identical with the monitor display.

Prerequisites

- Select memory test image (appendix).
- Set LUT to position 1.
- A camera warm-up of 20 minutes must be observed.
- Select the image subdivision to be tested.
- Select the image display (positive/negative) to be tested.
- Set the relevant B, C, D values shown in Table 1:

	positive image display				negative image display			
	B	C	D		B	C	D	
			at 50 Hz refresh rate	at 60 Hz refresh rate			at 50 Hz refresh rate	at 60 Hz refresh rate
Multispot 2000 1/4, full format	008	550	035	042	020	660	035	042
Multispot 2000 1/4, 4-on-1 image	008	550	016	019	020	660	016	019
Multispot 2000-2	008	550	021	025	020	660	021	025

Tab. 1

- Enter the film type used and the emulsion number:

Film type: Kodak EKTASCAN DNB; Emulsion number: _____

- Enter the film density values measured in Table 2.

NOTICE

In the case of deviations from the nominal value 2 (film density 40%), B must be corrected (adjusted).

Mark the fields which are not applicable in Table 2 with n/a.

	Setting values Factory function check			Film density		
	B	C	D		Nominal value	Factory
MS 2000 1/4, full image, negative image display				0% (1)	≤ 0.27	
				40% (2)	1.0 ± 0.3	
				100% (3)	≥ 2.4	
MS 2000 1/4, full image, positive image display				0% (1)	≥ 2.4	
				40% (2)	1.3 ± 0.3	
				100% (3)	≤ 0.27	
MS 2000 1/4, 4-on-1 image, negative image display				0% (1)	≤ 0.27	
				40% (2)	1.0 ± 0.3	
				100% (3)	≥ 2.4	
MS 2000 1/4, 4-on-1 image, positive image display				0% (1)	≥ 2.4	
				40% (2)	1.3 ± 0.3	
				100% (3)	≤ 0.27	
MS 2000-2, negative image display				0% (1)	≤ 0.27	
				40% (2)	1.0 ± 0.3	
				100% (3)	≥ 2.4	
MS 2000-2, positive image display				0% (1)	≥ 2.4	
				40% (2)	1.3 ± 0.3	
				100% (3)	≤ 0.27	

Tab. 2

Setting the multiformat camera at the customer's site

The setting must be performed for all possible image subdivisions, in each case with the image display (positive and/or negative) requested by the customer. Mark the settings not performed with n/a in the relevant table.
Definition: Positive image display means that the hardcopy image is identical with the monitor display.

- Film type used: _____ Emulsion number: _____
- Select memory test image (appendix).
- A camera warm-up of 20 minutes must be observed.
- Set LUT to position 1.
- Start the setting procedure with the B, C, D values shown in Table 2.
- Select the image subdivision to be set in each case.
- Select the image display to be set in each case.
- Change B until the 40% gray level (see Fig. 1) corresponds to the nominal value $D_{nominal}$ (see tables 3 to 6).
- Change C until the film density values for white and black correspond to the nominal values (see tables 3 to 6).

When increasing the contrast values (C), ensure that the 100%, 90% fields and/or the 0%, 10% fields can be distinguished from one another.

Multispot 2000-2

Negative image display:

- Enter the values determined in Table 3.
- Enter the values programmed for B, C, and D in Table 3.

Positive image display:

- Enter the values determined in Table 4.
- Enter the values programmed for B, C, and D in Table 4.

Multispot 2000 1/4

Negative image display

Full-field image ($^1/_1$)

- Enter the values determined in Table 3.
- Enter the values programmed for B, C, and D in Table 3.

4-on-1 image ($^1/_4$)

- Enter the values determined in Table 5.
- Enter the values programmed for B, C, and D in Table 5.

Positive image display:

Full-field image ($^1/_1$)

- Enter the values determined in Table 4.
- Enter the values programmed for B, C, and D in Table 4.

4-on-1 image ($^1/_4$)

- Enter the values determined in Table 6.
- Enter the values programmed for B, C, and D in Table 6.

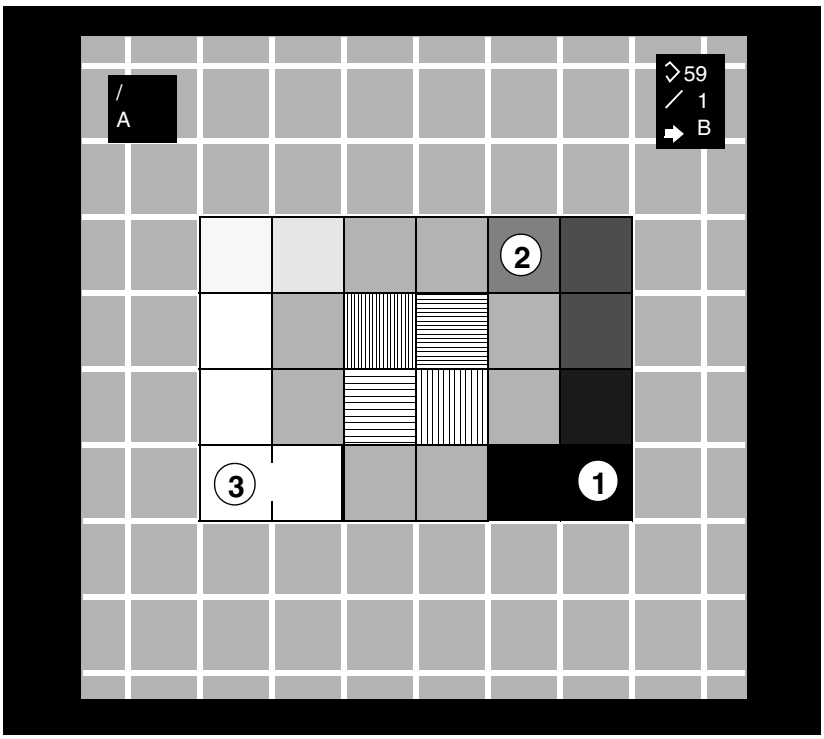

Fig. 1

Memory test image on the monitor [Film = Positive image display] (Fig. 1)

Application site:

Film density values for Multispot 2000-2 or Multispot 2000 1/4 with full-field image and negative image display:

Field	Nominal values Film density D_{nom}	Film density D	Programmed values	
0% (1)	≤ 0.25		B	
40% (2)	1.0 ± 0.1		C	
100% (3)	≥ 2.5		D	

Tab. 3

Application site:

Film density values for Multispot 2000-2 or Multispot 2000 1/4 with full-field image and positive image display:

Field	Nominal values Film density D_{nom}	Film density D	Programmed values	
0% (1)	≥ 2.4		B	
40% (2)	1.3 ± 0.1		C	
100% (3)	≤ 0.25		D	

Tab. 4

Application site:

Film density values for Multispot 2000 1/4 with 4-on-1 image and negative image display:

Field	Nominal values Film density D_{nom}	Film density D	Programmed values	
0% (1)	≤ 0.25		B	
40% (2)	1.0 ± 0.1		C	
100% (3)	≥ 2.5		D	

Tab. 5

Application site:

Film density values for Multispot 2000 1/4 with 4-on-1 image and positive image display:

Field	Nominal values Film density D_{nom}	Film density D	Programmed values	
0% (1)	≥ 2.4		B	
40% (2)	1.3 ± 0.1		C	
100% (3)	≤ 0.25		D	

Tab. 6

Checking the Multispot resolution

Prerequisites

- Select FLUO (standard settings, see appendix).
  - Select Siramatic HC1 ADR curve; the LED of the mA ↑ button is off.
- Select image intensifier full format.
- Set contrast setting for monitor B to LUT 1.
- Factory: Resolution test Type 41A; Application site: Resolution test Type 41.
- Attach the resolution test directly to the grid in the center of the image intensifier. It should be located at an angle of approximately 45º to the grid lines.
- **Factory:** Attach 25 mm AL measurement stand close to the image intensifier.
- **Application site:** If a 25 mm measurement stand is present (with 0.4 mm notch), attach it close to the image intensifier. Otherwise: Fasten17µm Cu next to the resolution test directly on the grid, and attach 1.2 mm Cu in the beam path close to the tube.
- If overframing occurs at the edge of the image intensifier, eliminate this with collimation.

- Switch radiation ON, and let it stabilize.
- Switch radiation OFF.
- Transfer (store) LIH image on monitor B.
- Select negative image display of the Multispot.

Multispot 2000-2

- Expose the film (both partial exposures) and develop it.
- Evaluate both partial exposures.
- Enter the lower resolution value in Table 7.

Resolution nominal values [**Lp/mm**] **negative image display**		**Actual resolution values** [**Lp/mm**] **negative image display**	
I.I. 23 (9")	I.I. 27 (11")	Factory	Application site
≥1.2	≥1.0		

Tab. 7

Multispot 2000 -1/4

- Expose a film at full format.
- Evaluate the exposure.
- Enter the values in Tab. 7.

- Expose a film in 4-on-1 format (all partial exposures).
- Evaluate all 4 partial exposures.
- Enter the lowest resolution in Tab. 8.

Image format	**Nominal resolution values** [**Lp/mm**] **negative image display**		**Actual resolution values** [**Lp/mm**] **negative image display**	
	I.I. 23 (9")	I.I. 27 (11")	Factory	Application site
Full format	≥1.2	≥1.0		
4-on-1 image	≥1.2	≥1.0		

Tab. 8

Diese Seite wurde bewusst leer gelassen.

NOTE	**The 3D limiting resolution can be obtained only if the system is in a properly calibrated condition.**

Required service materials

Resolution test	28 71 820 RE999
Calibration phantom Iso-C 3D with Navi	75 51 620 G5486

Preparations

- Move the C-arm to the horizontal position.
  Position: image intensifier on the basic system (see Fig. 1).
- Take the required stand out of the "Calibration Phantom Service Case".
- Attach the resolution test (lead strip test pattern) to the stand so that it is horizontal to the floor.
- Position the resolution test in the isocenter of the C-arm. Navigate from the side and longitudinal to the C-arm (see Fig. 2 and Fig. 3).
- If present use the laser light localizer to aid in locating the isocenter.

Fig. 1 Side view of the test configuration

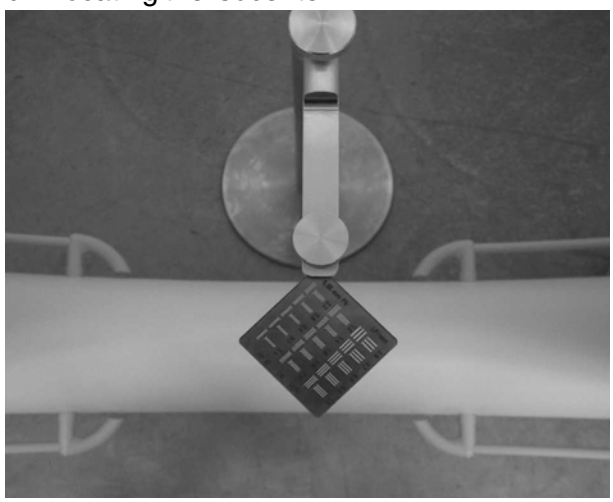

Fig. 2 Test configuration viewed from above

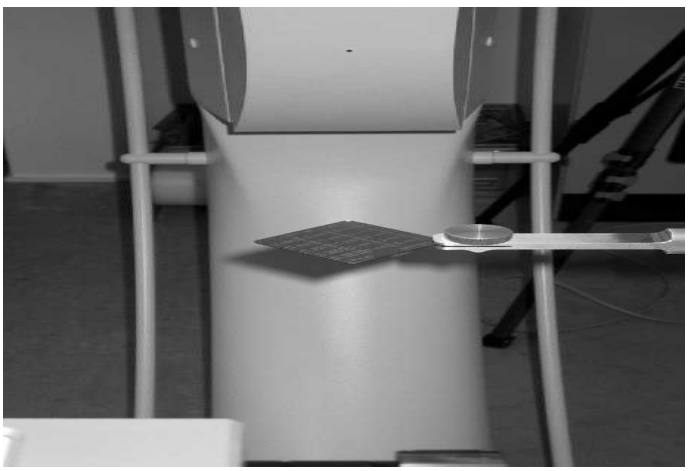

Fig. 3 Test configuration viewed from the system

Performing the test

- To switch to 3D mode,simultaneously press the Ctrl and D keys on the MEMOSKOP keyboard.
- Select 3D taskcard. The syngo screen will appear on the right monitor (Fig. 4).

Fig. 4 Syngo start screen

- Click on the Start Scan button in the 3D taskcard.

The following dialog box will appear (Fig. 5):

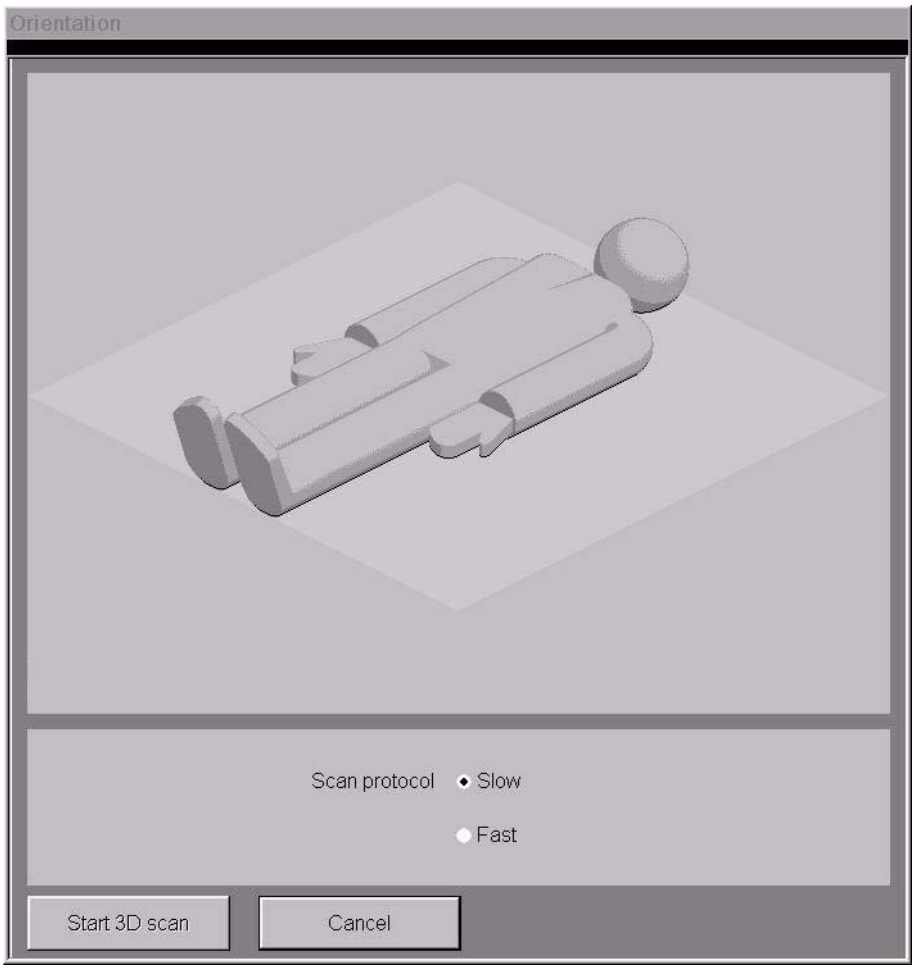

Fig. 5 Orientation menu

- Click on one leg.

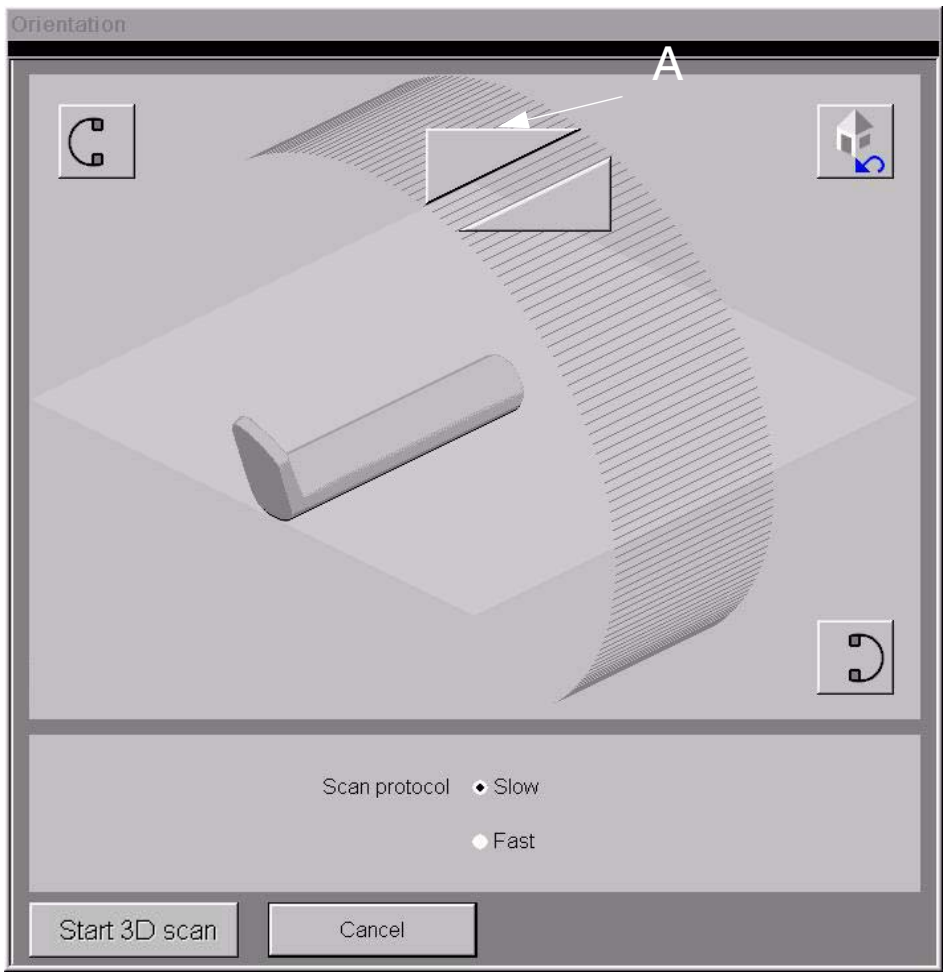

Fig. 6 Dialog box for selecting patient position and the direction of radiation

The following screen appears (Fig. 6).

- Press the A button.

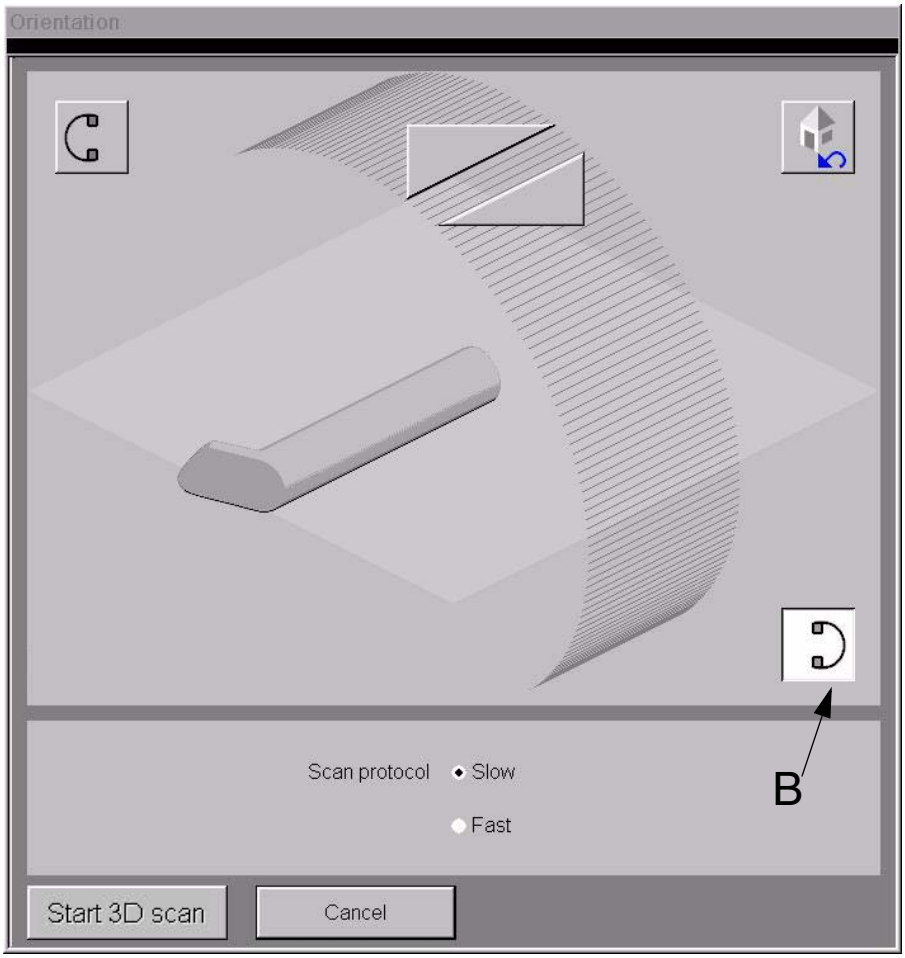

Fig. 7

- Press the B button. This activates the "Start 3D Scan" button (Fig. 7).
- Now select scan protocol "Slow."
- Click on the "Start 3D Scan" button.

Fig. 8

This screen will appear (Fig. 8).

- Manually move the C-arm to the end position (into the limit switch).
  Position: X-ray tube located on main unit.

The following screen appears (Fig. 9).

Fig. 9

- Manually move the C-arm to the start position (into the limit switch).
  Position: image intensifier located on main unit.

The following screen will appear following a successful manual test run (Fig. 10).

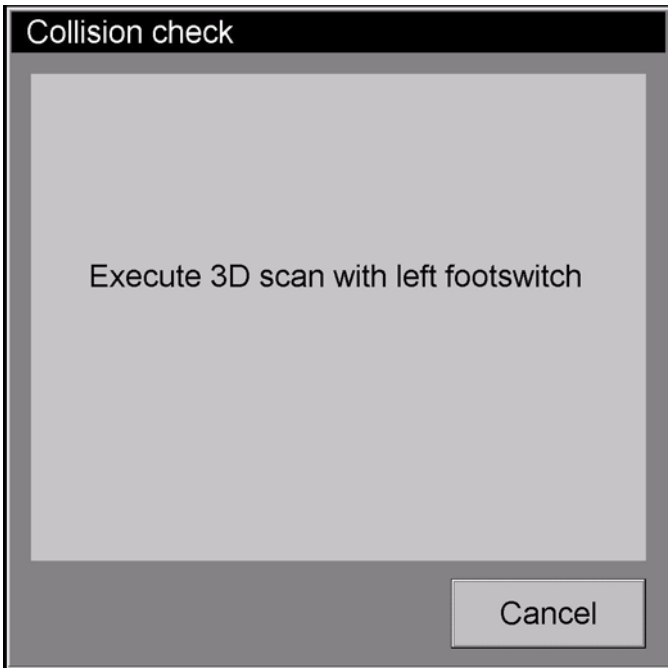

Fig. 10

Measurement run

- Start 3D scan with left footswitch.
- Keep foot on footswitch for approx. 2 minutes.
- In the left (Siremobil) monitor, check to see that the lead strip test pattern is lined up in the isocenter.
  Visible modulations (~ with projection 50) of up to 1.8 LP/mm should appear.
- The lead strip test pattern must be positioned in the center of the monitor image.
- If the object position greatly deviates from the isocentric object position, the measurement will be interrupted and the object will be repositioned (refer to "Preparation").

During the scan, the following pop-up window will appear (Fig. 11).

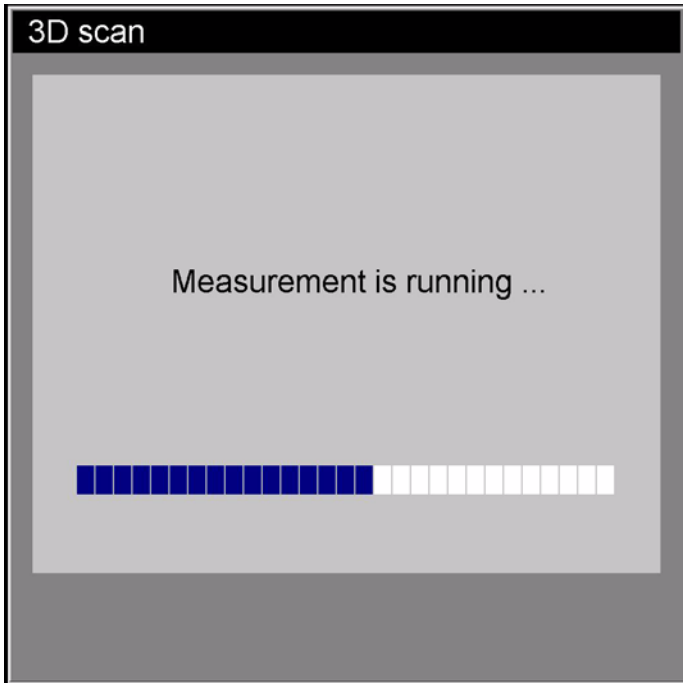

Fig. 11

Following a successful measurement, the following image will appear (Fig. 12).

Fig. 12

- Remove foot from the footswitch.

Once you have reached the end of the measurement, the reconstructed volume will automatically appear in MPR display in the 3D card (Fig. 13).

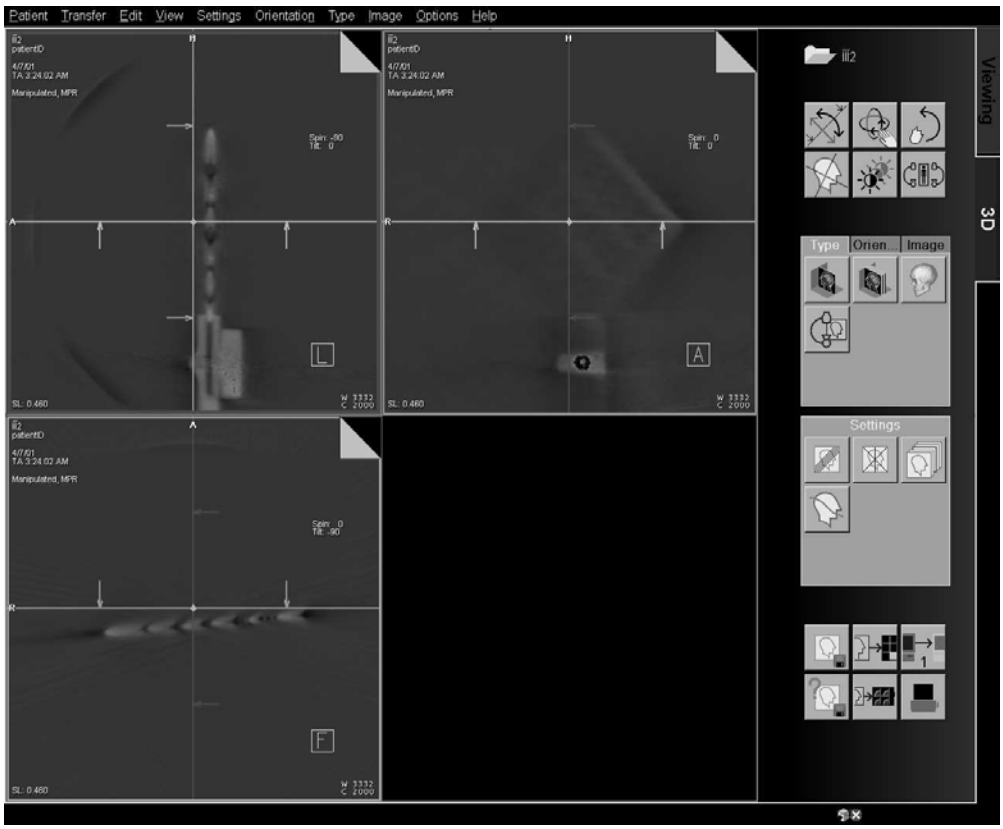

Fig. 13 Syngo interface following successful data input and back projection.

Checking 3D high resolution

Objective:
Determine an optimal slice plane for imaging the lead strip test pattern in a Syngo window.

- Select the plane perpendicular to the lead strip test pattern with the vertical bar (see Fig. 14).
- Next, select a slice plane in the center of the lead strip test pattern (see Fig. 15).

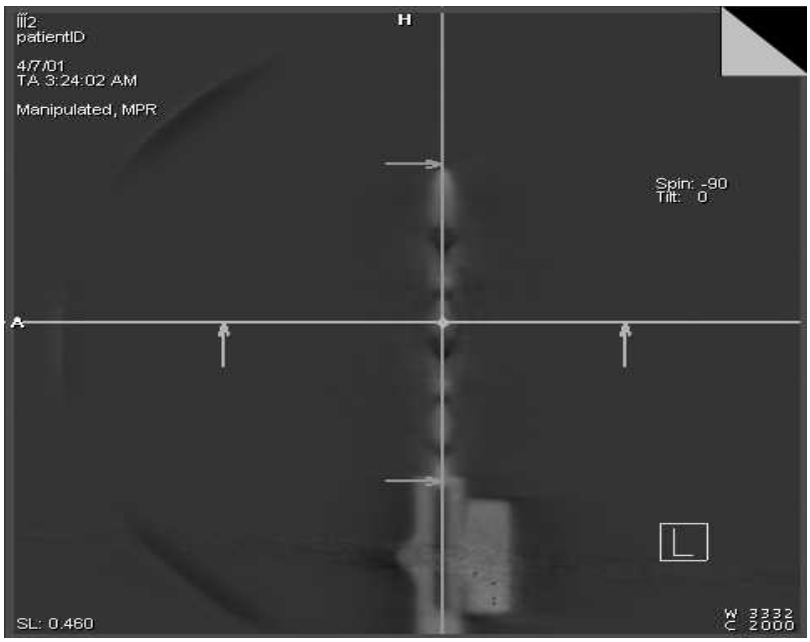

Fig. 14 Slice plane setting in the upper left window.

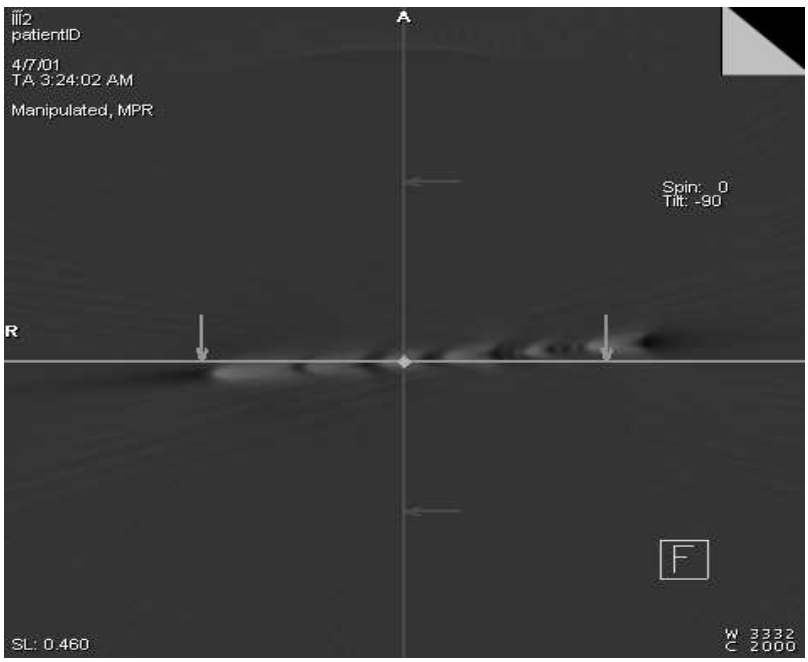

Fig. 15 Slice plane setting in the lower left window.

- If the lead strip test pattern is slanted in relation to the floor plane, correct the slice plane by rotating in Free Mode.
- A syngo image should display a plane parallel to the lead strip test pattern (see Fig. 16).

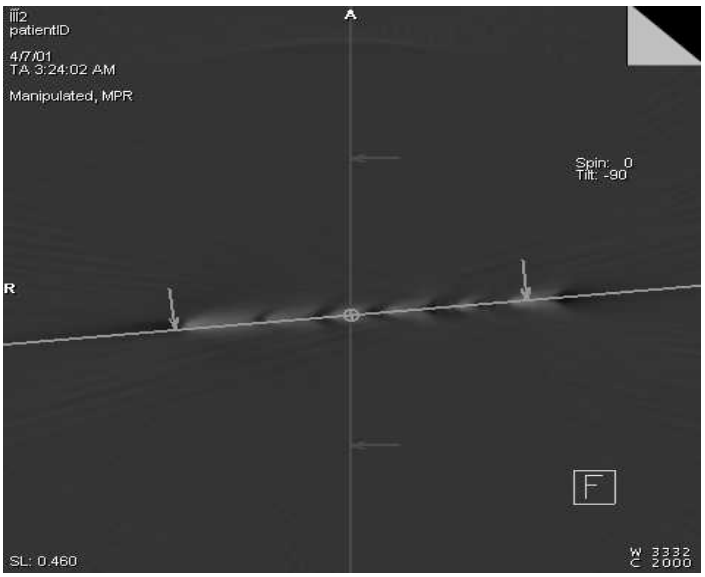

Fig. 16 Rotating the slice plane.

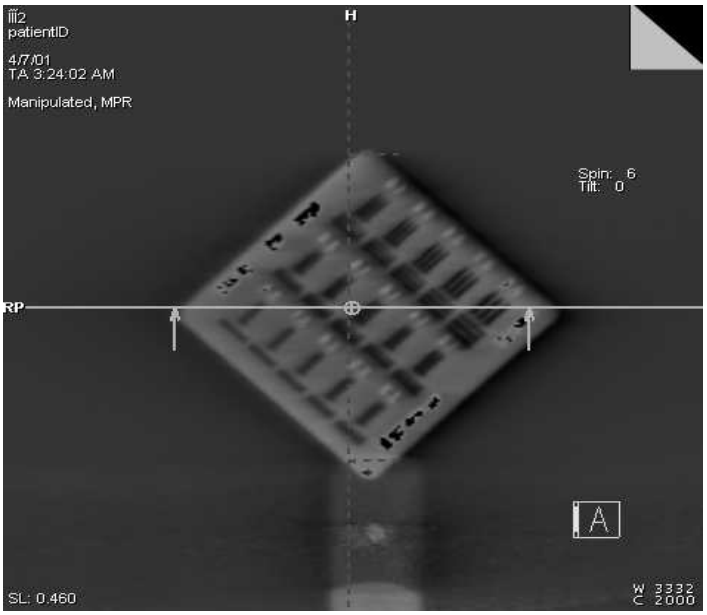

Fig. 17 Plane parallel to the lead strip test pattern.

- Next, by double clicking on the image "Slice parallel to lead strip test pattern," create a full-field display of the lead strip test pattern (Fig. 17).
- Check the 3D high resolution (1LP/mm). For this purpose, it may be necessary to review previous windows.

3D high resolution achieved: ☐ y/n

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Adjustment of the calibration phantom

Fig. 1 Setting the I.I. laser light localizer correctly

Fig. 2 Calibration phantom

Fig. 3 Vertical adjustment

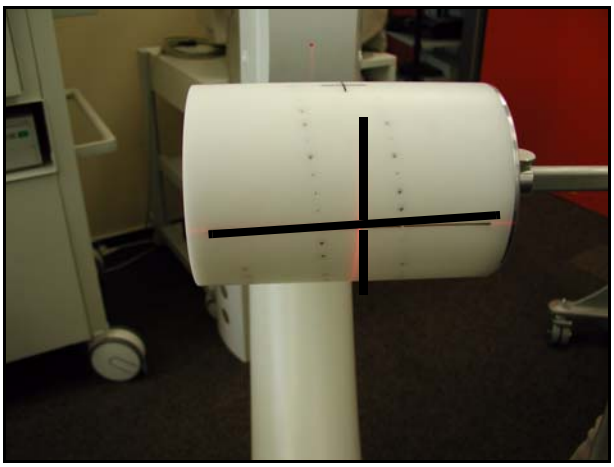

Fig. 4 Horizontal adjustment

- Take the required stand out of the "Calibration Phantom Service Case".
- Attach the calibration phantom to the stand.
- Adjust the laser light localizer to the tube assembly center (Fig. 1).
- Position the calibration phantom in the C-arm (Fig. 2).

With available light localizer:

- Using the laser light localizer, align the C-arm correctly to the markings on the calibration phantom, first in the vertical (Fig. 3) and then in the horizontal (Fig. 4) C-arm position.

Without laser light localizer:

- Align the C-arm correctly to the markings on the calibration phantom, first in the vertical (Fig. 3) and then in the horizontal (Fig. 4) C-arm position. Briefly perform fluoroscopy and check the position of the C-arm relative to the calibration phantom (see also Fig. 5).

- Check that the calibration phantom is positioned in the isocenter. To do so, check both the horizontal and vertical adjustment at least 2x (see also Fig. 5).

  ➪ Example of a correctly positioned calibration phantom. The tips of the sphere pattern must not be visible at the top and bottom image edge (Fig. 5).

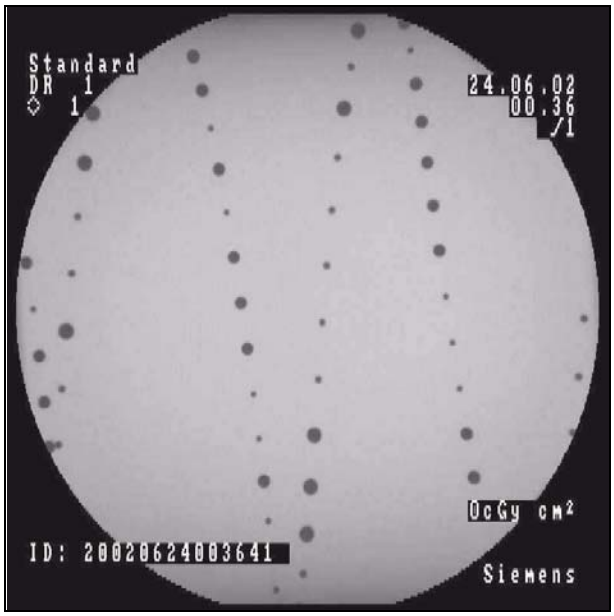

Fig. 5

Without 3D navigation

NOTE	**Without 3D navigation the old calibration phantom Iso C 3D Part No. 71 39 947 can still be used.**

- After booting press Ctrl and D and the system switches into the 3D mode.
- Select Calibration Iso C 3D in the "Home Menu".

  ➪ The following window appears (Fig. 6).

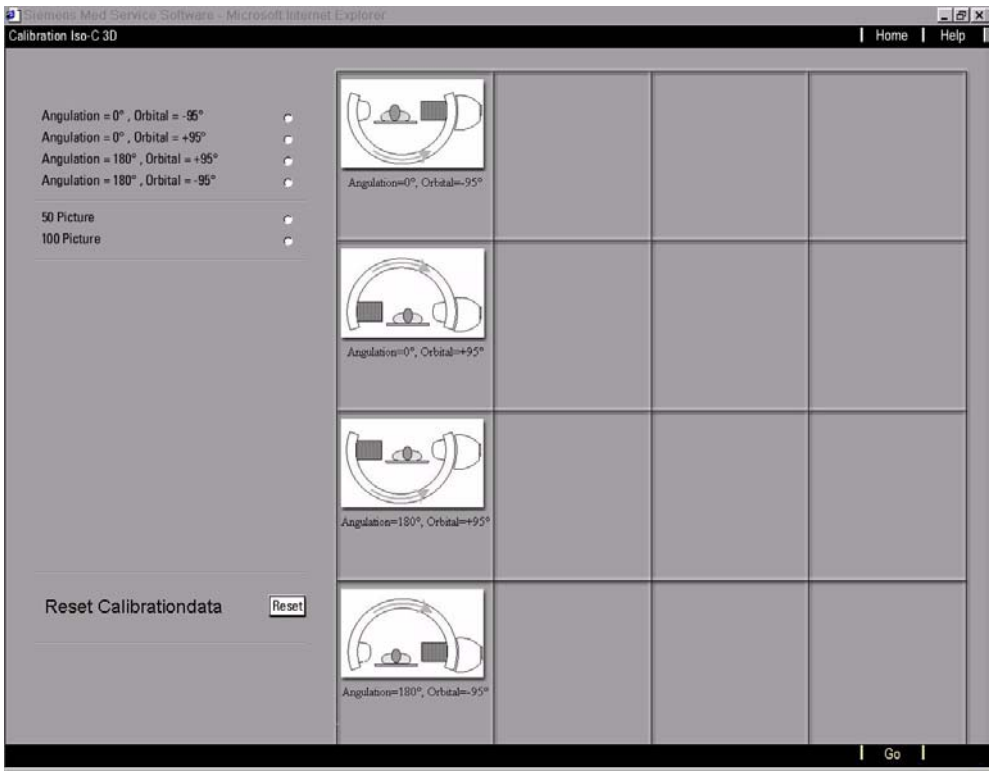

Fig. 6

- Maximize the display on the screen.
- After the "Reset all Calibration Data! Are you sure?" display appears click OK.
- Select the C-arm position.
- Bring the C-arm into this position.
- Select the number of images.
- Click "Go".
- Press the left foot switch, this releases the measuring run. Keep the foot switch pressed down (Fig. 7).

  ➪ The "Calibration successful" display appears at the end of the measuring run.

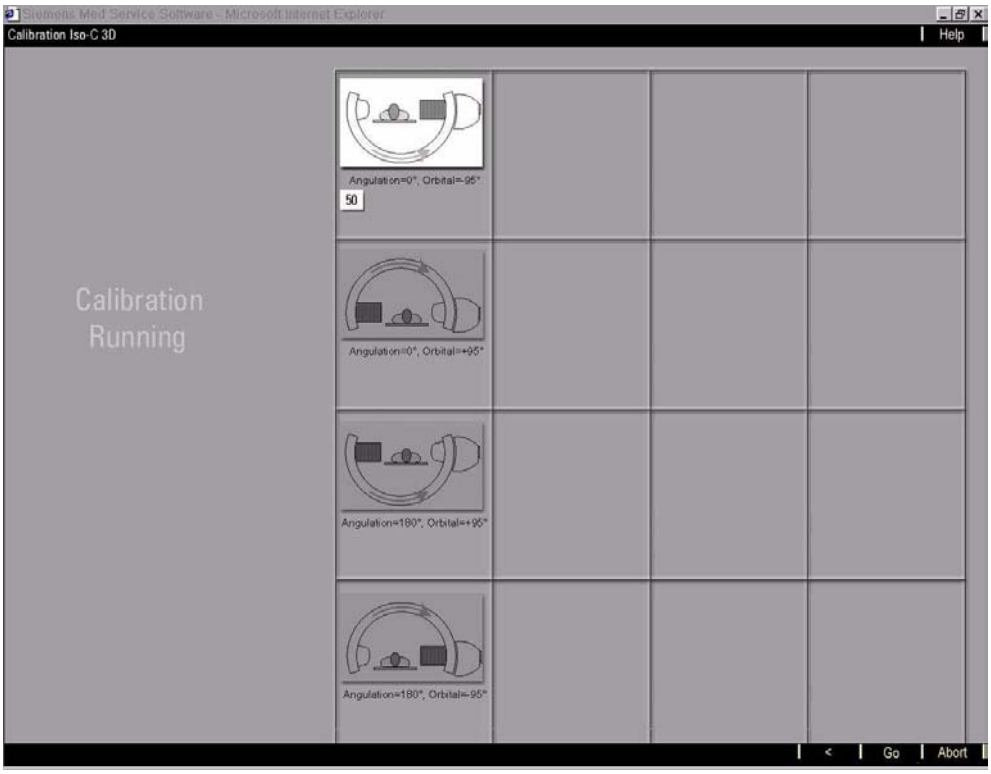

Fig. 7

- Click OK.

NOTE **All 8 positions must be calibrated.**

Make this setting one after the other	Setting	Number of images
No. 1	Angulation = 0 degrees Orbital = - 95 degrees	50
No. 2	Angulation = 0 degrees Orbital = + 95 degrees	50
No. 3	Angulation = 0 degrees Orbital = - 95 degrees	100
No. 4	Angulation = 0 degrees Orbital = +95 degrees	100
Intermediate step	The adjustment of the calibration phantom must be checked once again here	n.a.
No. 5	Angulation = 180 degrees Orbital = +95 degrees	50

Make this setting one after the other	Setting	Number of images
No. 6	Angulation = 180 degrees Orbital = - 95 degrees	50
No. 7	Angulation = 180 degrees Orbital = + 95 degrees	100
No. 8	Angulation = 180 degrees Orbital = - 95 degrees	100

With 3D navigation and removable image intensifier navigation shield

NOTE

This section applies for navigation systems in which it is possible for the customer to remove the navigation shield from the image intensifier.

The calibration must be performed in the 4 C-arm positions in each case for 50 images and 100 images both without navigation shield fitted and also with navigation shield fitted for each available navigation system.

According to how many navigation systems have been entered on the 3D PC, in each case 4 additional images of the C-arm positions with the entered name of the navigation system as heading and a selection button appear in the calibration window.

Calibration with navigation shield removed

NOTE

The navigation shield (if fitted) must be removed from the image intensifier before the calibration.

Example of a removable navigation shield (Fig. 8).

Fig. 8

- In the "Home Menu" service click the "Calibration Iso-C 3D" button.

➪ The following window appears (Fig. 9).

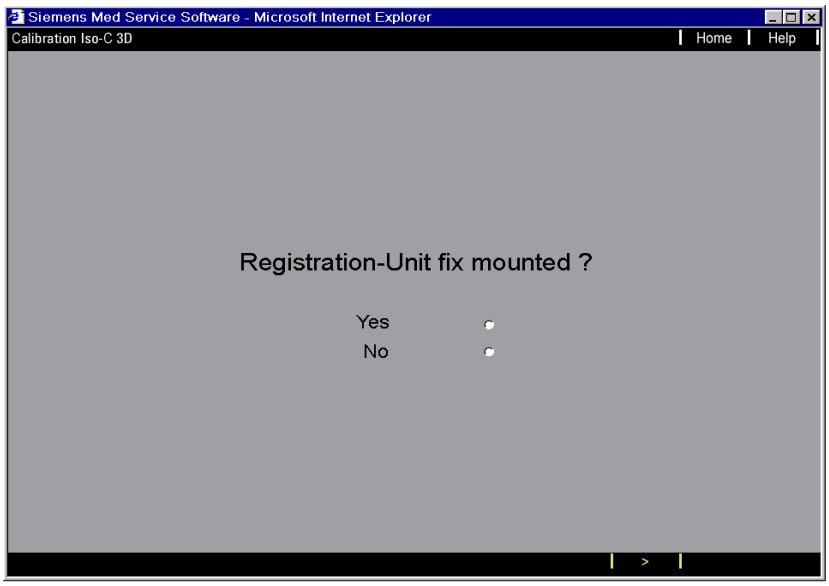

Fig. 9

- Select the "No" option for registration unit fix mounted.
- Click the ">" button.

➪ According to how many navigation systems are available at the customer, the calibration window appears (Fig. 10 shows as an example the full configuration with 3 navigation systems).

Fig. 10

- Select the "Without Navigation Shield" option.
- Select the C-arm position.
- Bring the C-arm into this position.
- Select the number of images.
- Click "Go".

- Press the left foot switch, the measuring run is released by this. Keep the foot switch pressed (Fig. 11).

  ➪ The "Calibration successful" display appears at the end of the measuring run.

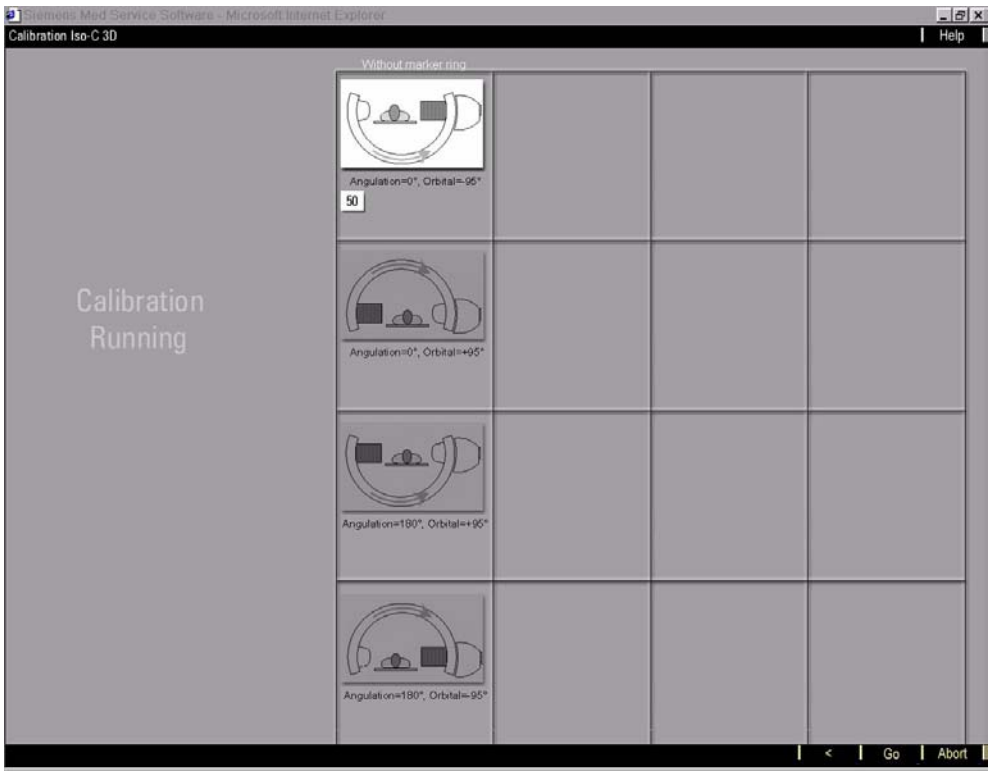

Fig. 11

- Click OK.

NOTE	**The calibration must be performed in all 4 C-arm positions both with 50 and with 100 images.**

Make this setting one after the other	Setting	Number of images
No. 1	Angulation = 0 degrees Orbital = - 95 degrees	50
No. 2	Angulation = 0 degrees Orbital = + 95 degrees	50
No. 3	Angulation = 0 degrees Orbital = - 95 degrees	100
No. 4	Angulation = 0 degrees Orbital = +95 degrees	100
Intermediate step	The adjustment of the calibration phantom must be checked once again here	n.a.
No. 5	Angulation = 180 degrees Orbital = +95 degrees	50
No. 6	Angulation = 180 degrees Orbital = - 95 degrees	50
No. 7	Angulation = 180 degrees Orbital = + 95 degrees	100
No. 8	Angulation = 180 degrees Orbital = - 95 degrees	100

Calibration with navigation shield fitted

NOTE

If more than one navigation system is used in combination with the SIREMOBIL Iso-C 3D, then the calibration must be performed with each navigation system + in each case the associated image intensifier navigation shield in cooperation with the technician of the navigation company.

NOTE

The relevant navigation shield must be fitted on the image intensifier using knurled screws / Allen keys. The calibration must be performed together with the navigation system and thus at the same time with a technician of the navigation company. During the calibration it must be possible for the markers on the image intensifier navigation shield and the calibration phantom to be acquired ("seen") by the cameras of the navigation system.

Care must be taken that the correct navigation system is selected in the calibration window.

- In the "Home Menu" service click on the "Calibration Iso-C 3D" button.

  ➪ The following window appears (Fig. 12).

Fig. 12

- Select the "No" option.
- Click the ">" button.

➪ The following window appears (example) (Fig. 13).

Fig. 13

- Select the navigation system to be calibrated (e. g. 1st Navigation System, see Fig. 13) (see software description setting for network nodes).
- Select the C-arm position. The selected C-arm position is displayed normally, all other C-arm positions are displayed with a gray background.
- Bring the C-arm into this position.
- Select the number of images.
- Click "Go".

- Press the left foot switch, the measuring run is released by this. Keep the foot switched pressed down (Fig. 14).

➪ At the end of the measuring run the "Calibration successful" display appears.

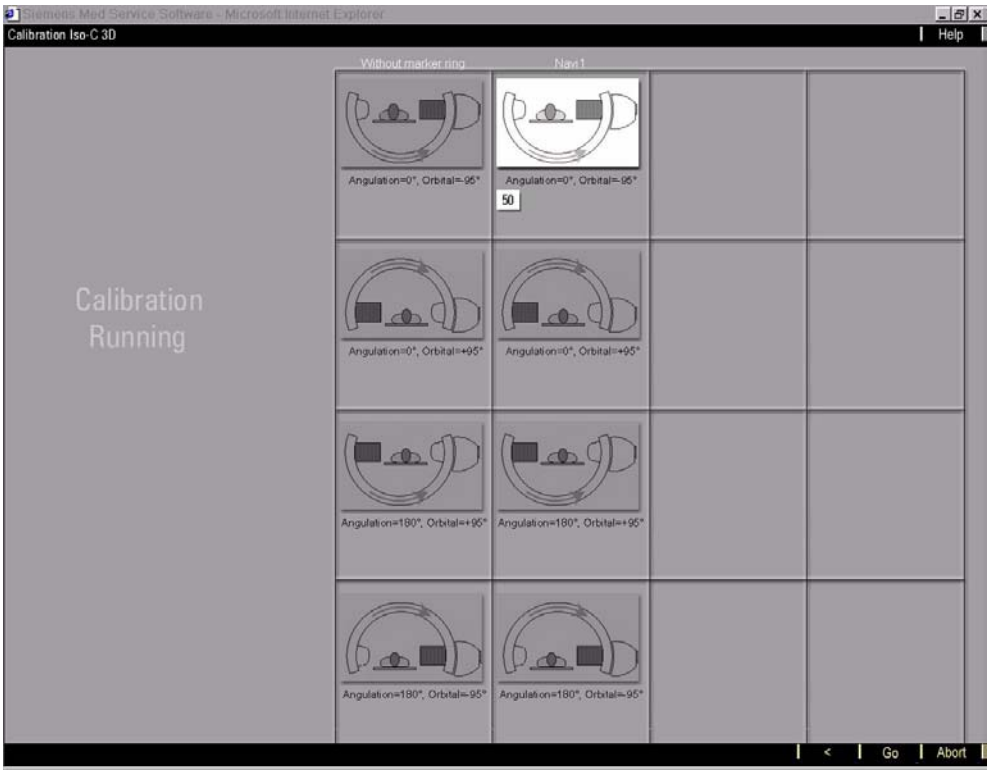

Fig. 14

- Click OK.

NOTE

For the selected navigation system the calibration must be performed in all 4 C-arm positions both with 50 and with 100 images (8 calibrations).

Make this setting one after the other	Setting	Number of images
No. 1	Angulation = 0 degrees Orbital = - 95 degrees	50
No. 2	Angulation = 0 degrees Orbital = + 95 degrees	50
No. 3	Angulation = 0 degrees Orbital = - 95 degrees	100
No. 4	Angulation = 0 degrees Orbital = +95 degrees	100
Intermediate step	The adjustment of the calibration phantom must be checked once again here	n.a.
No. 5	Angulation = 180 degrees Orbital = +95 degrees	50

Make this setting one after the other	Setting	Number of images
No. 6	Angulation = 180 degrees Orbital = - 95 degrees	50
No. 7	Angulation = 180 degrees Orbital = + 95 degrees	100
No. 8	Angulation = 180 degrees Orbital = - 95 degrees	100

NOTE

If further navigation systems are used in combination with the SIREMOBIL Iso-C 3D, these must be selected and the calibration performed in all 4 C-arm positions both with 50 and with 100 images (8 calibrations per navigation system).

With 3D navigation and fixed mounted image intensifier navigation shield of the MEDIVISION company

NOTE

This section applies for the 3D navigation system of the MEDIVISION company with fixed mounted image intensifier navigation shield.

In this the navigation shield is connected firmly with the image intensifier and cannot be removed by the customer.

The navigation shield must be already fitted permanently on the image intensifier by the technician of the navigation system.

The calibration must be performed in the 4 C-arm positions in each case for 50 images and 100 images with already fixed mounted navigation shield.
The presence of the Medivision technician is not necessary for the calibration.

NOTE

The calibration of the navigation system for the SIREMOBIL Iso-C 3D is performed by Medivision with its own calibration phantom. Also the check of the total accuracy of the 3D navigation.

- In the "Home Menu" service click the "Calibration Iso-C 3D" button.

  ➪ The following window appears (Fig. 12).

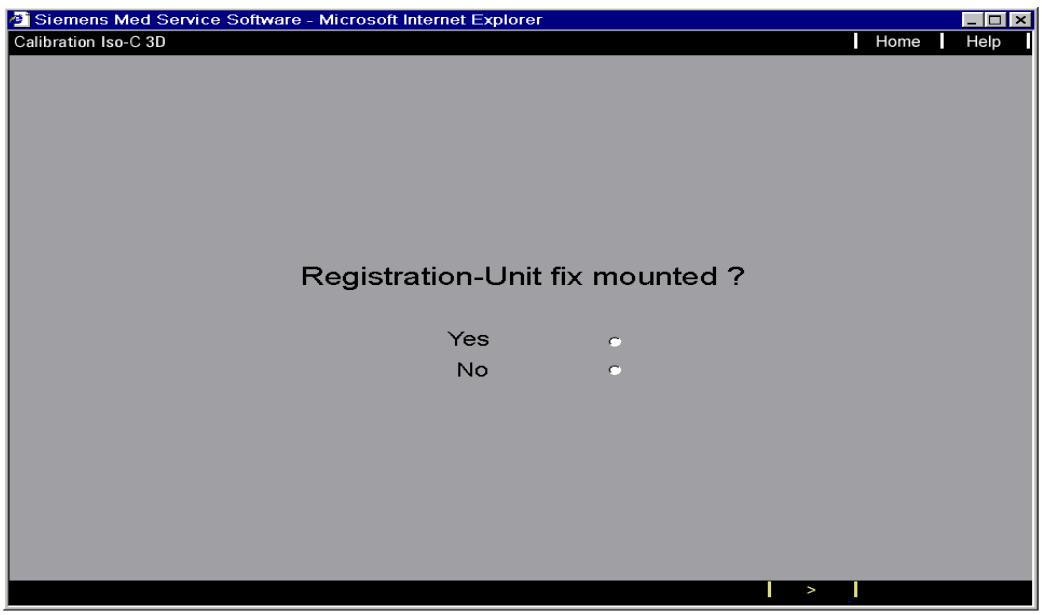

Fig. 15

- Select the "Yes" option.
- Click on the ">" button.

➪ The following window appears (example) (Fig. 13).

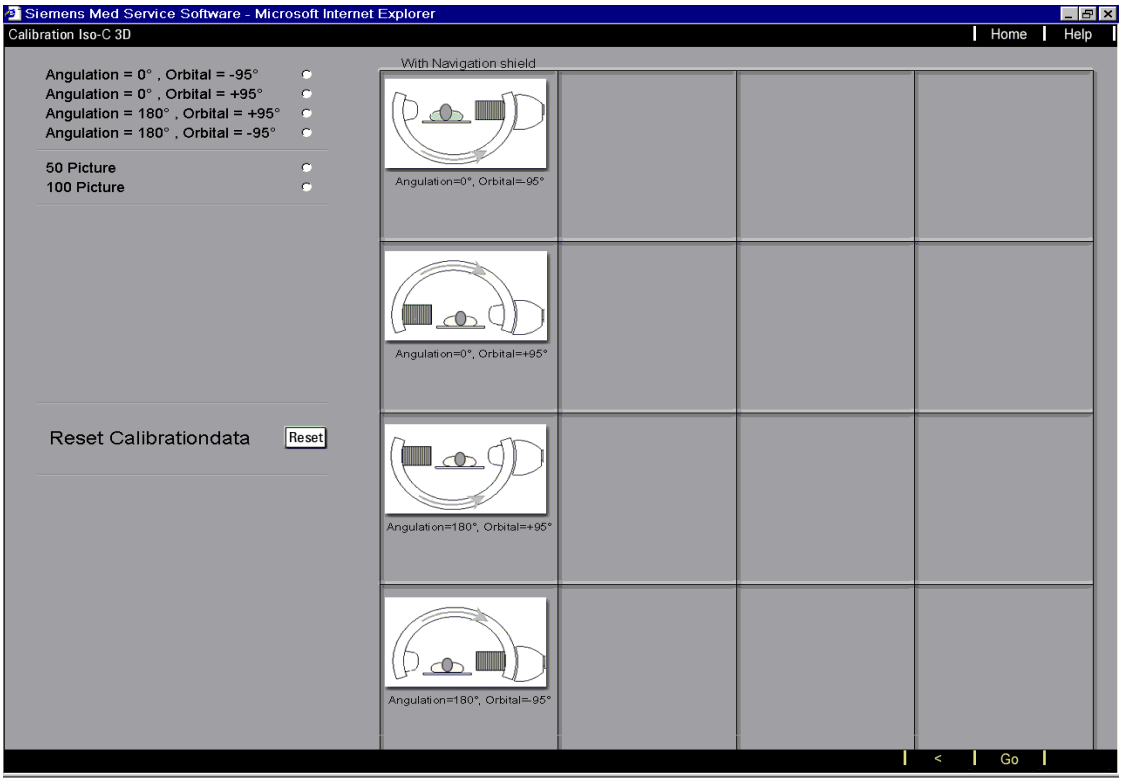

Fig. 16

- Select the C-position. The selected C-arm position is displayed normally, all other C-arm positions are displayed with a gray background.
- Bring the C-arm into this position.
- Select the number of images.
- Click on "Go".

- Press the left foot switch, the measuring run is released by this. Keep the foot switch pressed down (Fig. 14).

➪ At the end of the measuring run the "Calibration successful" display appears.

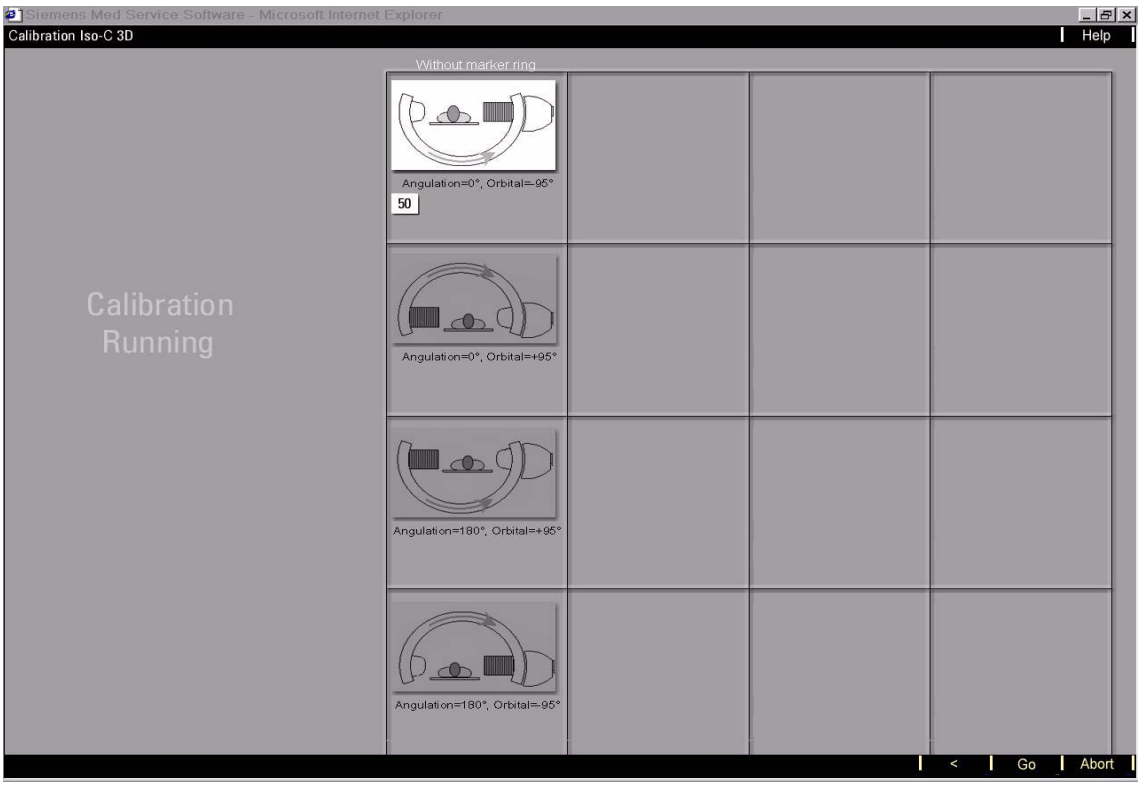

Fig. 17

- Click OK.

NOTE **The calibration must be performed in all 4 C-arm positions both with 50 and with 100 images (8 calibrations).**

Make this setting one after the other	Setting	Number of images
No. 1	Angulation = 0 degrees Orbital = - 95 degrees	50
No. 2	Angulation = 0 degrees Orbital = + 95 degrees	50
No. 3	Angulation = 0 degrees Orbital = - 95 degrees	100
No. 4	Angulation = 0 degrees Orbital = +95 degrees	100
Intermediate step	The adjustment of the calibration phantoms must be checked once again here	n.a.
No. 5	Angulation = 180 degrees Orbital = +95 degrees	50

Make this setting one after the other	Setting	Number of images
No. 6	Angulation = 180 degrees Orbital = - 95 degrees	50
No. 7	Angulation = 180 degrees Orbital = + 95 degrees	100
No. 8	Angulation = 180 degrees Orbital = - 95 degrees	100

Checking the total accuracy of the 3D navigation

NOTE

For the navigation system of the MEDIVISON with fixed mounted image intensifier navigation shield:
The calibration of the navigation system for the SIREMOBIL Iso-C 3D is performed by the MEDIVISION company with its own calibration phantom. Also the check of the total accuracy of the 3D navigation.

NOTE

For other navigation systems:
The check of the total accuracy after the calibration must be performed with the navigation system and thus at the same time with a technician of the navigation company.
During the 3D acquisition and the accuracy test it must be possible for the markers on the image intensifier, phantom and pointer to be seen by the navigation system.

- Fasten the reference clamp to the phantom carefully (the phantom is the customer's property).
- Position the phantom in the isocenter of the SIREMOBIL Iso-C 3D.
- Perform 3D acquisition and transfer image data record to the navigation system.
- According to Fig. 15 approach in three planes in each case a marker cone with a pointer up into the tip of the marker cone.

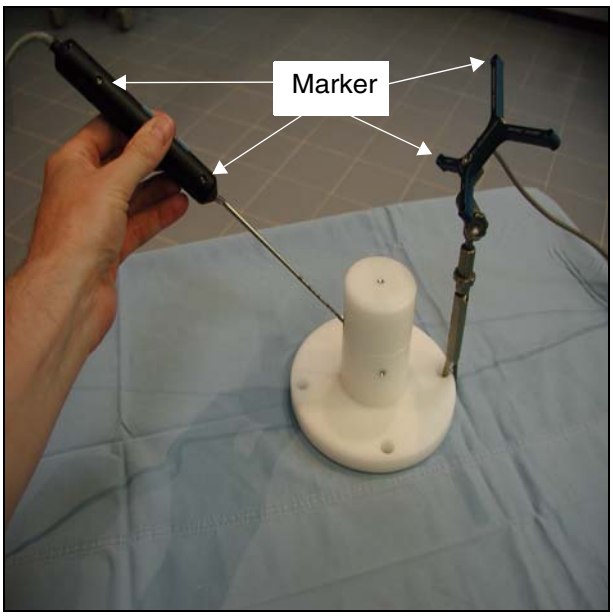

Fig. 18

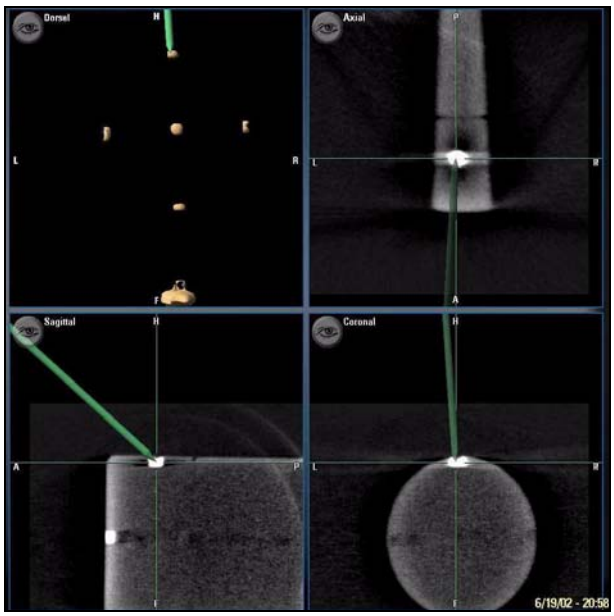

Fig. 19

- If all three tips are within the imaged marker cone on the navigation screen of the navigation company, then the accuracy of the 3D navigation is proven (Fig. 16).

- Complete the table with data of the relevant navigation system.

Marker cone approached in	Tip of pointer within the marker cone imaged on the navigation system?		
	Navi system	Navi system	Navi system .....
Plane 1 above			
Plane 2 center			
Plane 3 below			

The check of the total accuracy of the 3D navigation is completed successfully:

Name of Siemens technician	Date	Signature
Name of navigation technician.....	Date	Signature
Name of navigation technician.....	Date	Signature
Name of navigation technician.....	Date	Signature

Remarks:

Possible errors and corrective measures

Error	Possible cause	Corrective measure
Calibration unsuccessful	Phantom positioned incorrectly	Position phantom correctly
Image distorted	Lead balls missing in the calibration phantom	Order new calibration phantom
Poor image quality after calibration	Calibration process	Check 3D limiting resolution and recalibrate, if necessary
Insufficient accuracy of 3D navigation	Interface at the calibration phantom not clean or damaged	Perform visual check of calibration phantom for correct condition
	Navigation marker ring on I.I. not mounted correctly	Make sure the marker ring is mounted correctly
	Grid holder on the I.I. is dirty	Clean the I.I. and the grid holder
No registration possible during calibration with marker ring Calibration does not start	Markers are not detected in the starting position	Contact engineer of navigation company
Calibration with 3D navigation unsuccessful	Navigation system faulty	Contact engineer of navigation company
Other	Other	Read error messages in the Eventlog Reader Analyze and process errors acc. to troubleshooting instructions

Protective conductor test

- If the SIREMOBIL Iso-C covers were removed, perform the protective conductor test in accordance with ARTD part 2 (CD-ROM).

Diese Seite wurde bewusst leer gelassen.

Calling up the stored test patterns

Memory with keyboard

You can call up Technical Setup for the memory by pressing CTRL + T.

Various test patterns can be called up from the first menu.

Memory without keyboard

- Connect the service PC to the external service interface.
- Install the Memoskop service program on the service PC using the installation routine on the diskette.
  The service diskettes are located in the Log Book, Register 10.
- Call up the Memoskop service program in the "Test pattern generation" menu.
  Various test patterns can be called up from this menu.

Standard programming

The following default values are programmed in organ program 1 when the SIREMOBIL Iso-C is delivered:

Organ program 1 (User Setup)					
Operating mode	FL	IFL	DR	SUB	Roadmap
Program name (*4)	Standard	Standard	Standard	Standard	Standard
Doserate	MID	MID	HIGH	HIGH	HIGH
SIREMATIC normal	HC1	HC1	n.a. (DR850W*1)	n.a. (Iodine)	n.a. (Iodine)
SIREMATIC push	HC2	HC2	n.a. (DR850W*1)	n.a.	n.a.
Noise red. Low	MD1 (K4:K1)	K = 4	K = 8	n.a.	n.a.
Noise red. High	MD2 (K16:K2)	K = 8	K = 16	n.a.	n.a.
Dose reduction low	n.a.	high	n.a.	n.a.	n.a.
Dose reduction high	n.a.	high	n.a.	n.a.	n.a.
Auto LIH disk transfer (*2)	NO	NO	n.a.	n.a.	n.a.
Auto transfer each image (*2)	n.a.	NO	n.a.	n.a.	n.a.
Disk transfer rate (*2)	0	n.a.	n.a.	n.a.	n.a.
Auto disk transfer (*2)	n.a.	n.a.	YES	n.a.	n.a.
Subtraction (*3)	n.a.	n.a.	n.a.	MAX	MAX
Landmark (*3)	n.a.	n.a.	n.a.	NO	NO
Video signal at docum. (*5)	n.a.	n.a.	n.a.	POS	POS
Image display (*3)	n.a.	n.a.	n.a.	POS	POS

Organ program 1					
Duration of the phase B1 (*3)	n.a.	n.a.	n.a.	0 sec	n.a.
Disk tranfer rate phase B1 (*3)	n.a.	n.a.	n.a.	0	n.a.
Disk tranfer rate phase B2 (*3)	n.a.	n.a.	n.a.	3	n.a.

(*1) Observe a cool-down phase of 30 sec. between 2 sequential DR exposures. Otherwise, the ADR curve DR550W will be selected automatically.

(*2) For Memoskop C with hard disk only

(*3) For Memoskop C-SUB or Memoskop C-SUB & Mod only.

(*4) The name is listed as an example only and can be any program name.

(*5) Image display on film should correspond to image display on the monitor.

SUB & Roadmap Windows / Level			
/1 Brightness /1 Contrast	100 195	/4 Brightness /4 Contrast	115 225
/2 Brightness /2 Contrast	105 205	/5 Brightness /5 Contrast	120 235
/3 Brightness /3 Contrast	110 215	/6 Brightness /6 Contrast	127 245

SUB & Roadmap, Parameter Technical Setup	**SUB**	**Road**
Subtraction K-Factor, phase A	32	n.a.
Subtraction K-Factor, phase B	MD2	n.a.
Subtraction Time of phase A	3	n.a.
Roadmap K-Factor, phase A	n.a.	16
Roadmap K-Factor, phase B	n.a.	8
Roadmap K-Factor, phase C	n.a.	MD2
Roadmap Time of phase A	n.a.	2

Chap. 0	Cover page, revision level and contents newly generated.
Chap. 11 - 3 to 11-19	Revised and images actualized.

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